



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/031,873

01/24/2002

Takahisa Aoyama

L9289.02103

8693

24257

7590

08/26/2004

STEVENS DAVIS MILLER & MOSHER, LLP
1615 L STREET, NW
SUITE 850
WASHINGTON, DC 20036

EXAMINER

CHOW, CHARLES CHIANG

ART UNIT

PAPER NUMBER

2685

5

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/031,873

Applicant(s)

AOYAMA ET AL.

Examiner

Charles Chow

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01/24/2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Detailed Action

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title does not include the priority, transmission destination, directivity of transmission, as shown in the claim.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "154 in Fig. 5" has been used to designate both "AAA reception control section and "AAA transmission control section" in Fig. 5. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance. In Fig. 5, the 154 used in transmission path needs to be changed to "AAA transmission control section".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set

Art Unit: 2685

forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westall et al. (US 6,718,161 B1) in view of Kanemoto et al. (US 2002/0115,466 A1).

Regarding **claim 1**, Westall et al. (Westall) teaches a base station apparatus (base station 68 for mobile users 84, Fig. 6a-6b) comprising priority determining means for determining priority for communication terminal apparatus in communications (the receiving packet information having packet datum 76, transmission data 80 and transmission priority data 82, the processor arbitrates, judges, decides, the highest transmission priority based on the packet destination and transmission priority in col. 5, line 51 to col. 6, line 13). Westal teaches the directivity transmission means for carrying out packet signal transmission with directivity to said determined communication terminal apparatus (the transmitting beam is pointed to an angle 98 for transmitting packet data 76 to selected user 84, col. 6, lines 25-41).

Regarding the transmission destination determining means for determining one or a plurality of communication terminal apparatus to which packet transmission is performed based on the direction in which each communication terminal apparatus exists and said priority, Westall teaches the processor 86 receiving the destination data 80, priority data 82 and packet 76 from packet switch 70, and arranging highest transmission priority by moving highest priority packet data based on packet destination and transmission priority (col. 5, line 51 to col. 6, line 13), the plurality of communication terminal apparatus (the mobile users 84, Fig. 6a), the processor 86 commands antenna to point the beam to selected user 84 (col. 6, lines 14-24). Westal

Art Unit: 2685

does not describe clearly about the transmission destination determining based on terminal apparatus exist and priority. However, Kanemoto et al. (Kanemoto) teaches the transmission destination determining means is performed based on the terminal apparatus exist and said priority (the base station, in Fig. 2-3, comprises 108 for determining shared channel usage request from mobile station based on the direction of arrival estimation 106, for determining of the existence of communication terminal apparatus from certain angle, for sending signal to data selector 110 for controlling antenna directivity via AAA directivity control 111 [0036-0045]), the transmission destination determination is based on the priority (Fig. 7A-7B, [0059-68]). Kanemoto teaches the improved high speed data communication [0001] for reducing interference, for increasing reception quality SIR and system capacity [0006-0010]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify West with Kanemoto's terminal determining section 108 of base station for determining the communication terminal exist by detecting the angle of arrival from communication terminal, and pointing the antenna based not the angle and priority, such that the base station could reduce the interference and improve the system capacity [0006-0007].

Regarding **claim 2**, Westal teaches the transmission destination determining for selecting the communication terminal apparatus with the highest priority first (col. 6, lines 8-13) and then selects the communication terminal apparatus with the highest priority from among the communication terminal apparatuses except the signal sent to the first selected communication terminal apparatus (the moving the highest priority to the front of the transmission buffer 90 for earlier transmission, in sequence, then to

Art Unit: 2685

select the next communication terminal apparatus with the highest priority from among the terminal apparatuses except the signal being sent to the first selected apparatus).

Regarding **claim 13**, Westall teaches the carries out a radio communication with the base station apparatus in claim 1 above, and receiving packet signals sent from said base station apparatus (the base station transmits packet data over assigned communication channel 96 with the pointing angle 98, col. 6, lines 25-40).

Regarding **claim 14**, Westall teaches a packet transmission method for a base station apparatus (base station 68 for mobile users 84, Fig. 6a-6b) comprising the steps of determining priority for a plurality of communication terminal apparatus in communications in descending order for the down link (the receiving packet information having packet datum 76, transmission data 80 and transmission priority data 82, the processor arbitrates, judges, decides, the highest transmission priority based on the packet destination and transmission priority in col. 5, line 51 to col. 6, line 13, the highest priority order sequence in the descending order in the transmission buffer 90 for the down link). Westall teaches carrying out packet signal transmission with directivity to said determined communication terminal apparatus (the transmitting beam is pointed to an angle 98 for transmitting packet data 76 to selected user 84, col. 6, lines 25-41).

Regarding the transmission destination determining means for determining one or a plurality of communication terminal apparatus to which packet transmission is performed based on the direction in which each communication terminal apparatus exists and said priority, Westall teaches the processor 86 receiving the destination

data 80, priority data 82 and packet 76 from packet switch 70, and arranging highest transmission priority by moving highest priority packet data based on packet destination and transmission priority (col. 5, line 51 to col. 6, line 13), the plurality of communication terminal apparatus (the mobile users 84, Fig. 6a), the processor 86 commands antenna to point the beam to selected user 84 (col. 6, lines 14-24). Westal does not describe clearly about the channel quality, the transmission destination determining based on terminal apparatus exist and priority. However, Kanemoto et al. (Kanemoto) teaches the channel quality [107], the transmission destination determining means is performed based on the terminal apparatus exist and said priority (the base station, in Fig. 2-3, comprises 108 for determining shared channel usage request from mobile station based on the direction of arrival estimation 106, for determining of the existence of communication terminal apparatus from certain angle, for sending signal to data selector 110 for controlling antenna directivity via AAA directivity control 111 [0036-0045]), the transmission destination determination is based on the priority (Fig. 7A-7B, [0059-68]). Kanemoto teaches the improved high speed data communication [0001] for reducing interference, for increasing reception quality SIR and system capacity [0006-0010]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify West with Kanemoto's terminal determining section 108 of base station for determining the communication terminal exist by detecting the angle of arrival from communication terminal, and pointing the antenna based not the angle and priority, such that the base station could reduce the interference and improve the system capacity [0006-0007].

Art Unit: 2685

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Westall in view of Kanemoto, as applied to claim 1 above, and further in view of Scherzer et al. (US 2001/0031,647 A1).

Regarding **claim 3**, Westall and Kanemoto fail to teach the when the directivity transmitting means divides communication terminal apparatus into several groups and carries out transmission with directivity formed group by group, the transmission destination determining means selects the communication terminal apparatus with the highest priority from each group. However, Scherzer et al. (Scherzer) teaches the forming antenna beam for forward link with improved signal quality (abstract), the forming forward link beam for M groups of subscriber unit [0045, 0057], the selected based on service priority metrics, queue priority, for the subscriber units in groups [0060, 0084]. Scherzer teaches the base station for forming antenna beam for groups of subscriber units for high data rate communication to avoid latencies [0012]. based on the service priority metrics [0060], for reducing inter-cell interference [0020]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify West with Scherzer's grouping subscriber units into groups and forming antenna to groups of units based on service priority metrics, such that the inter-cell interference for the base station could be reduced.

5. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westall in view of Kanemoto, as applied to claim 1 above, and further in view of Parkvall et al. (US 6,542,736 B1).

Art Unit: 2685

Regarding **claim 4**, Westall and Kanemoto fail to teach packet signal modulation system based on the channel quality of the downlink, wherein the directivity transmitting means modulated packets according to the determined modulation system and carries out transmission with directivity. However, Parkvall et al. (Parkvall) teaches the modulation system based on the channel quality of the downlink from base station, the high channel quality for assigning higher order modulation for higher bit rates; the lower bit rate for farther away for mobile terminals from base station, col. 2, lines 25-56; the modulation types QPSK, 8PSK, 16 QAM 64 QAM, the code rate R1-R8, the coding rate 1/4-3/4, in Fig. 2; the for mobile stations, the base station selected acceptable sector to perform transmission using sectore antenna and rate selections in steps 180-186 in Fig. 12). Parkvall teaches the base station select directivity sector antenna for improving quality of the data transmission with variable data rate and modulation type, for better signal quality (col. 2, line 24 to col. 4, line 15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify West with Parkvall's sector antenna selection for base station for variable modulation types, data rate, coding rate, such that the base station could improve the downlink signal quality.

Regarding **claim 5**, Parkvall teaches the modulation system determining means adopts a higher rate modulation system as the channel quality of the downlink increase (the high channel quality for assigning higher order modulation for higher bit rates; the lower bit rate for farther away for mobile terminals from base station, col. 2, lines 25-56).

Claim Claims Objection

Art Unit: 2685

8. Claims 6-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. **Claims 6** are objected to, due to claim 6 requires three references for a claim rejection by utilizing Wegner (US 6,728,554 B1), Chen et al. (US 2002/0137,538 A1) and Yun et al. (US 2002/0039,355 A1). Wegner et al. teaches the beam width is varied inversely proportional to the number of the active remote users, col. 8, lines 7-21; col. 2, lines 15-37); Chen et al. teaches varying beam width for high data rate transmission [0034], with modulator [0052-0053]. Yun et al. teaches the modulation data rate can be increased when the users is decreased to improve the system capacity [0114], based on the modulation information, reverse data rate indicator RRI [0147, 0006] and the data rate control information DRC is applied to the forward link [0139]. However, the multiple combination of cited references could not provide the obviousness for combining cited references. Regarding **claim 7**, Yun teaches the modulation system determining means adopts a higher rate modulation system as the density calculated by the density calculating means decreases [0114, 0147, 0006,0139]. However, due to claim 7 is depending upon claim 6, the combining of multiple cited references could not provide the obviousness for claim rejection. Regarding **claim 8**, Chen teaches the directivity width controlling means controls the directivity width so that the directivity width becomes narrower for higher rate modulation system [0034, 0052-0053]. However, due to claim 8 is depending upon claim 6, the combining of multiple cited references could not provide the obviousness for claim rejection. Regarding **claim 9**, Wegner teaches the directivity width controlling means controls the directivity width so that

Art Unit: 2685

the directivity width becomes narrower as the calculated density increase (col. 8, lines 7-21; col. 2, lines 15-37). However, due to claim 9 is depending upon claim 6, the combining of multiple cited references could not provide the obviousness for claim rejection. Regarding **claim 10**, Sawada et al. (US 2001/0055,287 A1) teaches the modulation system which is based on the detected speed of the mobile terminal [0073, abstract], the transmission rate is reduced when speed is increased [Sawada's claims 2, claim 5]. Yamaguchi et al. (2002/0039,912 A1) teaches the varying the antenna beam width so that the wide angle beam is for high traveling speed [0012]. However, due to claim 10 is depending upon claim 6, the combining of multiple cited references could not provide the obviousness for claim rejection. Regarding **claim 11**, Sawada et al. teaches the modulation system determining means adopts a lower rate modulation system as the detected speed increases [0073, abstract, Sawada's claims 2, claim 5]. However, due to claim 11 is depending upon claim 10, the combining of multiple cited references could not provide the obviousness for claim rejection. Regarding dependent **claim 12**, Yamaguchi et al. teaches the directivity width is controlled so that the directivity width becomes wider as the detected speed increases (the varying the antenna beam width so that the wide angle beam is for high traveling speed [0012]). However, due to claim 12 is depending upon claim 10, the combining of multiple cited references could not provide the obviousness for claim rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2685

- A. US 2002/0034,967, March 2002, Taniguchi et al. teaches the adaptive antenna with changing direction and beam width (abstract, Fig. 2).
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (703)-306-5615. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (703)-305-4385.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

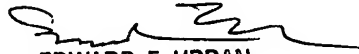
Washington, D.C. 20231

or faxed to: (703) 872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Charles Chow C.C.

August 13, 2003.


EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600